ABSTRACT

To improve a power balance of an optical add/drop multiplexer, an add amplifier is optically coupled to an add path of an optical add/drop module. A through loss associated with a signal passing through the add/drop module, a drop loss associated with a signal travelling a drop path of the add/drop module, and an add loss associated with a signal travelling an add path of the add/drop module are known or otherwise calibrated values. A dropped channel power measurement is used in conjunction with the through loss, add loss, drop loss, number of dropped channels and number of added channels to determine an add path amplification value. The gain of the add amplifier is controlled according to add path amplification value so that the power level of the added channel(s) substantially matches the power level of the WDM signal output from the add/drop multiplexer. Furthermore, the gain profile of the add amplifier preferably matches a gain profile of a signal input to the add/drop module. In this way, the power level and gain profile of the added channel(s) can be controlled to match the power level and gain profile of the signal passing through the add/drop module.